WHAT IS CLAIMED IS:

1. A data slicer comprising:

an A/D conversion unit for converting an input signal including data which are transmitted in serial, into a digital signal;

a slice level data calculation unit for calculating plural pieces of slice level data for binarizing the digital signal, on the basis of the digital signal;

a binarization unit for binarizing the digital signal using the plural pieces of slice level data, to be converted into plural binarized signals;

an extraction pulse generation unit for generating an extraction pulse to be used for extracting the data from the binarized signals;

an extraction unit for extracting the data from the binarized signals in accordance with the extraction pulse, thereby generating plural pieces of serial data;

a decoding unit for decoding the plural pieces of serial data, thereby generating plural pieces of decoded data; and

a decoded data selection unit for selectively outputting decoded data including no error, from among the plural pieces of decoded data.

2. The data slicer of Claim 1 wherein

the input signal is a signal having a reference waveform

of a predetermined cycle,

said data slicer includes:

a maximum/minimum retrieval unit for retrieving maximum and minimum values of the digital signal; and

a reference cycle detection unit for determining whether a cycle of the digital signal is the cycle of the reference waveform or not, and

said slice level data calculation unit calculates the plural pieces of the slice level data on the basis of an average value and an amplitude of the digital signal, which are calculated from the maximum and minimum values when the reference waveform cycle is detected.

3. The data slicer of Claim 2 wherein

the slice level data calculation unit employs the calculated average value as reference slice level data, and calculates upper slice level data by adding an offset value that is decided on the basis of the calculated amplitude, to the reference slice level data, and lower slice level data by subtracting the offset value from the reference slice level data.

4. The data slicer of Claim 1 wherein

the input signal is a signal of character broadcast that is transmitted being superimposed upon a vertical blanking interval of a video signal.

5. A data slicer comprising:

an A/D conversion unit for converting an input signal including a reference waveform of a predetermined cycle and amplitude, into a digital signal;

a reference cycle detection unit for determining whether a cycle of the digital signal is the cycle of the reference waveform or not;

a maximum/minimum retrieval unit for retrieving maximum and minimum values of the digital signal;

an amplitude evaluation unit for determining whether an amplitude of the digital signal, which is calculated from the retrieved maximum and minimum values, is the amplitude of the reference waveform or not;

a slice level data calculation unit that employs an average value of the digital signal, which is calculated from the maximum and minimum values when detecting the cycle and amplitude of the reference waveform, as slice level data; and

a binarization unit for binarizing the digital signal into the slice level data, to be converted into a binarized signal.

6. The data slicer of Claim 5 wherein

the maximum/minimum retrieval unit retrieves maximum and minimum values of the digital signal in each cycle, and

the amplitude evaluation unit determines whether the

amplitude calculated from the maximum and minimum values in each cycle is the amplitude of the reference waveform or not.

7. The data slicer of Claim 5 or 6 wherein

when calculating the average value from the maximum and minimum values, the slice level calculation unit carries out an averaging process for the calculated average and the slice level data that has been calculated in a previous cycle, and updates the slice level data on the basis of the obtained average.

8. The data slicer of Claim 5 wherein

the reference waveform and the data signal correspond to a signal of character broadcast which is transmitted being superimposed upon a vertical blanking interval of a video signal.

9. A data slicer comprising:

an A/D conversion unit for converting an input signal of a predetermined cycle and amplitude, including data which are transmitted in serial, into a digital signal;

a reference cycle detection unit for determining whether a cycle of the digital signal is the predetermined cycle or not;

a maximum/minimum retrieval unit for retrieving maximum and minimum values of the digital signal;

an amplitude evaluation unit for determining whether an amplitude of the digital signal, which is calculated from the

retrieved maximum and minimum values, is the predetermined amplitude or not;

a slice level data calculation unit for calculating plural pieces of slice level data on the basis of an average value and an amplitude of the digital signal, which are calculated from the maximum and minimum values at a time when the predetermined cycle and amplitude are detected;

a binarization unit for binarizing the digital signal using the plural pieces of slice level data, to be converted into plural binarized signals;

an extraction pulse generation unit for generating an extraction pulse to be used for extracting the data from the binarized signals;

an extraction unit for extracting the data from the plural binarized signals in accordance with the extraction pulse, thereby generating plural pieces of serial data;

a decoding unit for decoding the plural pieces of serial data, thereby generating plural pieces of decoded data;

a decoded data selection unit for detecting an error from the plural pieces of decoded data, and selectively outputting one of the decoded data when errors are detected from all of the decoded data, or decoded data including no error when there are decoded data in which no error is detected;

an error count unit for counting errors in the data outputted from the decoded data selection unit; and

a controller for controlling the evaluation in the amplitude evaluation unit on the basis of the output from the error count unit.

10. The data slicer of Claim 9 wherein

the input signal includes a reference waveform for calculating the slice level data,

said data slicer includes a reference waveform detection unit for detecting the reference waveform,

the reference cycle detection unit evaluates the cycle of the digital signal in a period when the reference waveform is detected,

the maximum/minimum retrieval unit retrieves the maximum and minimum values of each cycle in the period when the reference waveform is detected, and

the amplitude evaluation unit determines whether the amplitude calculated from the maximum and minimum values in each cycle is the predetermined amplitude or not.

11. The data slicer of Claim 9 wherein

the input signal includes a reference waveform for calculating the slice level data,

a unit of the data is composed of predetermined bits;

said data slicer includes:

a reference waveform detection unit for detecting the

reference waveform;

a data unit detection unit for outputting a data unit detection pulse at intervals of the data unit, on the basis of the decoded data,

the maximum/minimum retrieval unit retrieves the maximum and minimum values in each cycle in a period when the reference waveform is detected, while retrieving the maximum and minimum values in each data unit on the basis of the data unit detection pulse in a period when the decoded data are outputted, and

the amplitude evaluation unit determines whether the amplitude calculated from the maximum and minimum values in each cycle or each data unit is the predetermined amplitude or not.

12. The data slicer of Claim 10 or 11 wherein

the slice level data calculation unit employs the average value as reference slice level data, decides an offset value on the basis of the amplitude calculated by the amplitude calculation unit, and calculates upper slice level data by adding the offset value to the reference slice level data and lower slice level data by subtracting the offset value from the reference slice level data.

13. The data slicer of Claim 12 wherein

when calculating the average value from the maximum and minimum values, the slice level data calculation unit carries out

an averaging process for the calculated average value and the reference slice level data that has been calculated in a previous cycle, and updates the reference slice level data on the basis of the obtained average value.

14. The data slicer of Claim 12 or 13 wherein

when the predetermine cycle and amplitude are detected, the slice level data calculation unit carries out an averaging process for the predetermined amplitude and an amplitude of the previous cycle, and decides the offset value on the basis of the obtained average amplitude.

15. The data slicer of Claim 9 wherein

the input signal is a signal of character broadcast that is transmitted being superimposed upon a vertical blanking interval of a video signal.

16. A data slicing method for binarizing an input signal of a predetermined cycle using slice level data that are calculated on the basis of the input signal, and extracting data included in the input signal, comprising:

an A/D conversion step of converting the input signal that is transmitted in serial, into a digital signal;

a reference cycle detection step of determining whether a cycle of the digital signal is the predetermined cycle or not;

a maximum/minimum retrieval step of retrieving maximum and minimum values of the digital signal;

a slice level data calculation step of calculating plural pieces of slice level data on the basis of an average value and an amplitude of the digital signal, which are calculated from the maximum and minimum values at a time when the predetermined cycle is detected;

a binarization step of converting the digital signal into plural binarized signals using the plural pieces of slice level data;

a data extraction step of extracting data in accordance with an extraction pulse for extracting data from the binarized signals, thereby generating plural pieces of serial data;

a decoding step of decoding the plural pieces of serial data, thereby generating plural pieces of decoded data; and

a decoded data selection step of determining the presence or absence of errors in the decoded data, and selectively outputting decoded data including no error.

17. A data slicing method for binarizing an input signal of a predetermined cycle and amplitude using slice level data which are calculated on the basis of the input signal, and extracting data included in the input signal, comprising:

an A/D conversion step of converting the input signal that is transmitted in serial, into a digital signal;

a reference cycle detection step of determining whether a cycle of the digital signal is the predetermined cycle or not;

a maximum/minimum retrieval step of retrieving maximum and minimum values of the digital signal;

an amplitude evaluation step of determining whether an amplitude of the digital signal, which is calculated from the retrieved maximum and minimum values is the predetermined amplitude or not;

a slice level data calculation step of calculating plural pieces of slice level data on the basis of an average value and an amplitude of the digital signal, which are calculated from the maximum and minimum values at a time when the predetermined cycle and amplitude are detected;

a binarization step of converting the digital signal into plural binarized signals using the plural pieces of slice level data;

a data extraction step of extracting data from the plural binarized signals in accordance with an extraction pulse for extracting data, thereby generating plural pieces of serial data;

a decoding step of decoding the plural pieces of serial data, thereby generating plural pieces of decoded data;

a decoded data selection step of detecting errors in the plural pieces of decoded data, and selectively outputting one of the decoded data when errors are detected from all of the decoded data, or decoded data including no error when there are decoded

data in which no error is detected; and

an amplitude evaluation control step of counting errors in the decoded data selected in the decoded data selection step, and controlling the evaluation in the amplitude evaluation step on the basis of the number of errors.

18. The data slicing method of Claim 16 or 17 wherein

in the slice level data calculation step, the average value is employed as reference slice level data, an offset value is decided on the basis of the amplitude, then upper slice level data is calculated by adding the offset value to the reference slice level data, and lower slice level data is calculated by subtracting the offset value from the reference slice level data.

19. An amplitude evaluation value setting method comprising:

a start value setting step of setting a start value at an amplitude evaluation value for determining whether an input signal including data which are transmitted in serial is a desired signal or not;

a signal detection step of evaluating an amplitude of the input signal on the basis of the amplitude evaluation value in a predetermined period, thereby detecting the desired signal;

a slice level data calculation step of, when detecting the desired signal, calculating slice level data for binarizing the input signal, on the basis of the detected desired signal;

a binarization step of binarizing the input signal using the slice level data, to be converted into a binarized signal;

a decoding step of decoding serial data which are extracted from the binarized signal, thereby generating decoded data;

an error count step of counting errors in the decoded data, and storing the amplitude evaluation value and the number of errors;

an amplitude evaluation value update step of binarizing and decoding the input signal and counting errors in the decoded data during a predetermined period, thereafter subjecting the amplitude evaluation value to an arithmetic process using a predetermined step value, so as to approach an end value, and updating the amplitude evaluation value; and

an amplitude evaluation value selection step of selecting an amplitude evaluation value that minimizes the number of errors as an optimum amplitude evaluation value, on the basis of the numbers of errors at various amplitude evaluation values, which are obtained by changing the amplitude evaluation value in the predetermined step value from the start value to the end value.